FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

April 1 to April7, 2012 (Week 14)

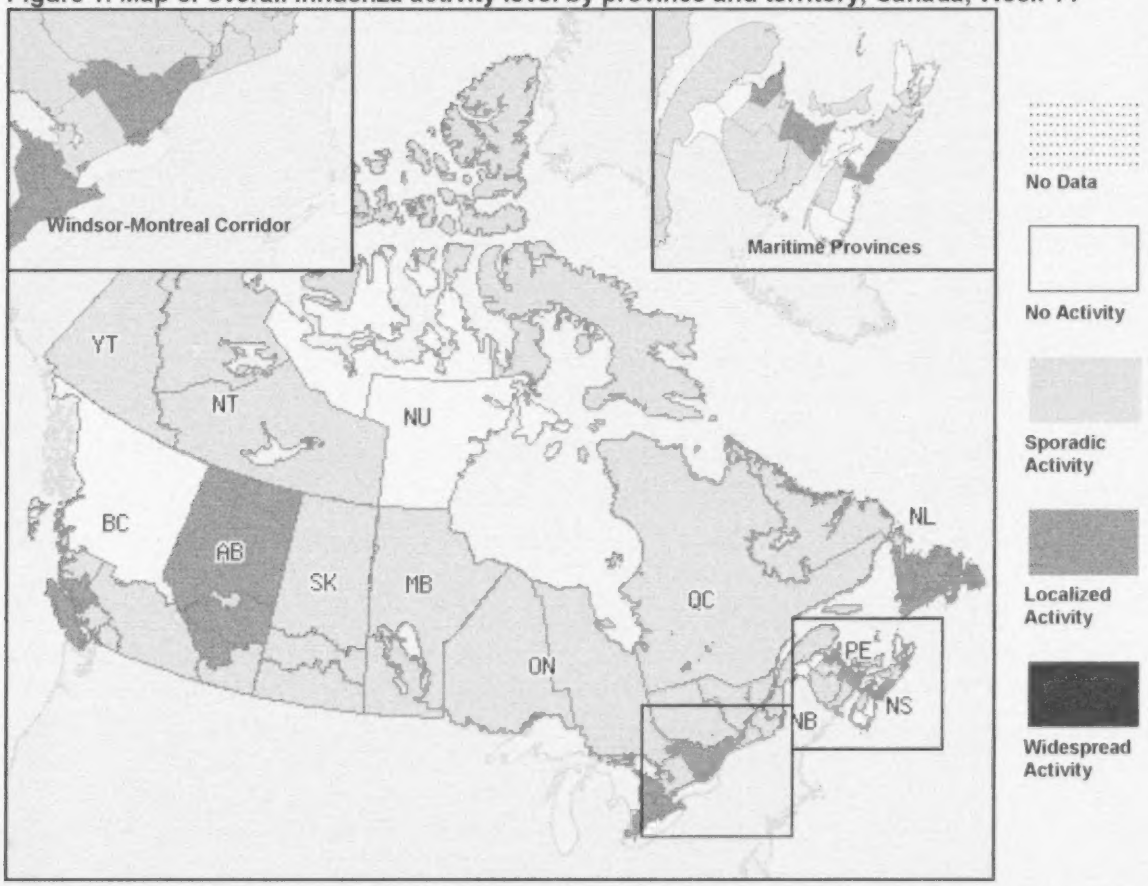
Overall Influenza Summary

- Overall influenza activity in Canada continues to decline; however activity remains elevated in some regions of the country (i.e. Atlantic Region, Ontario, Alberta & British Colombia).
- Forty-eight outbreaks of influenza or ILI were reported this week (27 in LTCFs, 4 in hospitals, 5 in schools and 12 others).
- In week 14, 762 laboratory detections of influenza were reported (12.7% - A(H3); 6.6% - A(H1N1)pdm09; 21.4% - unsubtyped and 59.3% influenza B). The proportion of positive detections for influenza B declined and increased for influenza A compared to the previous week.
- 89 influenza-associated hospitalizations were reported this week (22 paediatric through IMPACT surveillance and 67 adult through aggregate surveillance)
- The ILI consultation rate increased compared to the previous week but remains within expected levels.

Influenza Activity (geographic spread) and Outbreaks

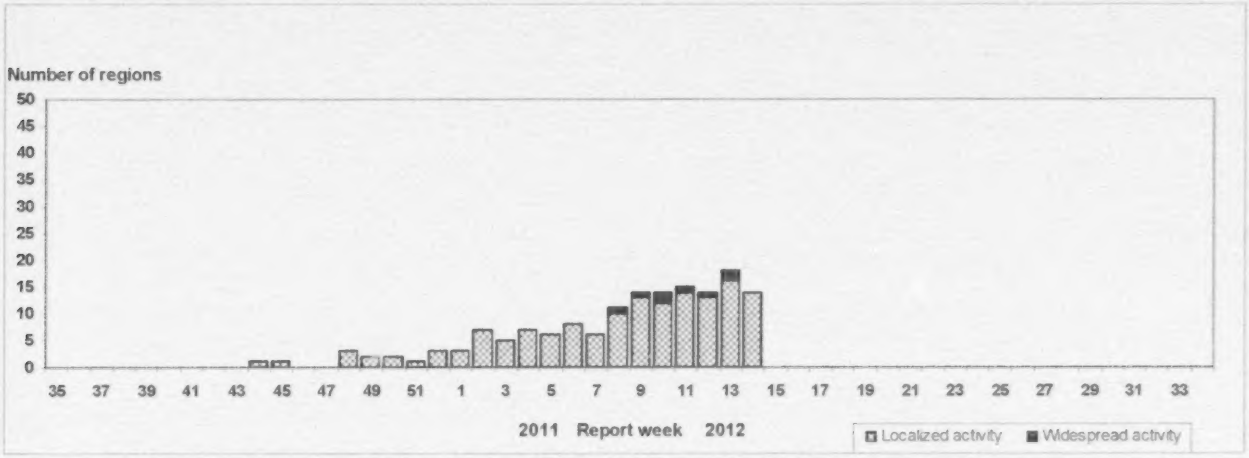
In week 14, 14 surveillance regions (within BC, AB, ON, NS, NB,& NL) reported localized activity and 32 regions (within all provinces and territories) reported sporadic influenza activity (see Figure 1). Forty-eight outbreaks of influenza or ILI were reported this week: 27 in long-term care facilities (1 in BC, 2 in AB, 21 in ON, 2 in NS, & 1 in NL), 4 in hospitals (2 in ON, & 2 in NS), 5 in schools (1 in AB, 4 in NB) and 12 others (2 in AB, 5 in ON, 3 in NS & 2 in NL) (Figure 3).

Figure 1. Map of overall influenza activity level by province and territory, Canada, Week 14



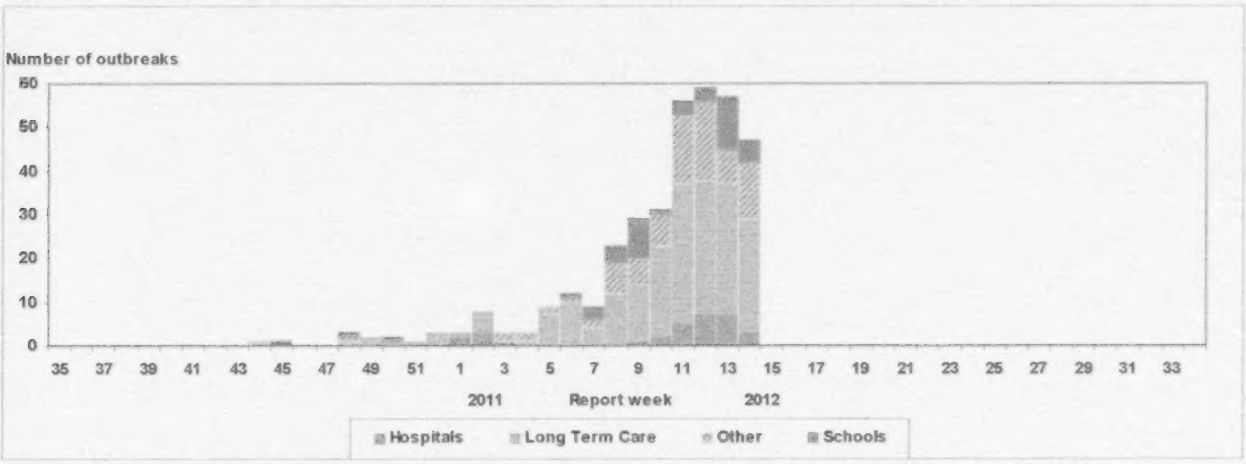
Note: Influenza activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates (see graphs and tables) and reported outbreaks. Please refer to detailed definitions on the last page. For areas where no data is reported, late reports from these provinces and territories will appear on the FluWatch website.

Figure 2. Number of influenza surveillance regions† reporting widespread or localized influenza activity, Canada, by report week, 2011-2012 (N=56)



† sub-regions within the province or territory as defined by the provincial/territorial epidemiologist. Graph may change as late returns come in.

Figure 3. Overall number of influenza outbreaks, Canada, by report week, 2011-2012



Influenza and Other Respiratory Virus Detections

The proportion of positive influenza tests slightly increased this week and was 22.5% (909/4044) (Figure 4 & 5). The proportion of positive detections for influenza B (11.2%) declined and for influenza A (11.3%) the proportion detected increased in week 14 compared to the previous week. To date this season, influenza B remains the predominant virus type circulating in Manitoba, Ontario and all of the Atlantic Provinces.

Cumulative to date of influenza virus detections by type/subtype is as follows: 50.6% influenza A (40.5% - A(H3); 18.8% - A(H1N1)pdm09; 40.7% - unsubtyped) and 49.3% influenza B (Table 1).

Detailed information on age and type/subtype were received on 7,301 cases to date this season (Table 2). The proportions of cases by age group are as follows: 21.5% were < 5 years; 18.3% were between 5-19 years; 23.2% were between 20-44 years; 15.1% were between 45-64 years of age; 21.6% were >= 65 years; and 0.2% with age unknown. The largest proportion of influenza A cases were between 20-44 years of age (27%) and those >=65 years of age (23%). The largest proportion of influenza B cases were under 20 years of age (49.3%).

In week 14, the percentage positive for other respiratory was similar compared to the previous week except for rhinovirus which increased (RSV-8.9%; parainfluenza-1.0%; adenovirus-2.1%; human metapneumovirus-3.2%; rhinovirus-7.2 %; and coronavirus-3.9%) (Figure 5). For more details, see the weekly Respiratory Virus Detections in Canada Report.

Table 1. Weekly & Cumulative numbers of positive influenza specimens by Provincial Laboratories, Canada, 2011-2012

Reporting provinces	April 1 to April 7, 2012						Cumulative (August 28, 2011 to April 7, 2012)					
	Influenza A					B	Influenza A					B
	A Total	A(H1)	A(H3)	Pand H1N1	A (UnS)*	Total	A Total	A(H1)	A(H3)	Pand H1N1	A (UnS)*	Total
BC	34	0	19	11	4	7	479	0	399	68	12	78
AB	92	0	57	12	23	22	1000	0	783	156	61	112
SK	22	0	7	4	11	18	439	0	292	41	106	44
MB	2	0	0	0	2	32	54	0	8	1	45	166
ON	34	0	2	20	12	153	790	0	186	439	165	2027
QC	114	0	4	2	108	155	1480	0	46	88	1346	1426
NB	3	0	3	0	0	38	55	0	17	21	17	112
NS	3	0	2	1	0	13	6	0	2	1	3	76
PE	0	0	0	0	0	3	3	0	2	1	0	20
NL	6	0	3	0	3	11	52	0	30	4	18	187
Canada	310	0	97	50	163	452	4358	0	1765	820	1773	4248

*Unsubtyped: The specimen was typed as influenza A, but no test for subtyping was performed. Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Note: Weekly data is based on week of positive lab detection. Cumulative data includes updates to previous weeks; due to reporting delays, the sum of weekly report totals do not add up to cumulative totals.

Table 2. Weekly & Cumulative numbers of positive influenza specimens by age groups reported through case-based laboratory reporting, Canada, 2011-2012*

Age groups	Weekly (April 1 to April 7, 2012)					Cumulative (Aug. 28, 2011 to April 7, 2012)				
	Influenza A				B	Influenza A				B
	A Total	Pandemic H1N1	A/H3N2	A unsubtyped	Total	A Total	Pandemic H1N1	A/H3N2	A unsubtyped	Total
<5	42	4	7	31	34	778	164	274	340	791
5-19	27	1	6	20	41	462	66	234	162	876
20-44	31	4	5	22	49	1061	213	387	461	633
45-64	17	3	8	6	19	699	140	237	322	406
65+	50	2	19	29	39	904	58	557	289	675
Unknown	0	0	0	0	0	14	6	7	1	2
Total	167	14	45	108	182	3918	647	1696	1575	3383

Please note that this table reflects the number of specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported. Delays in the reporting of data may cause data to change retrospectively.

Figure 4. Influenza tests reported and percentage of tests positive, Canada, by report week, 2011-2012

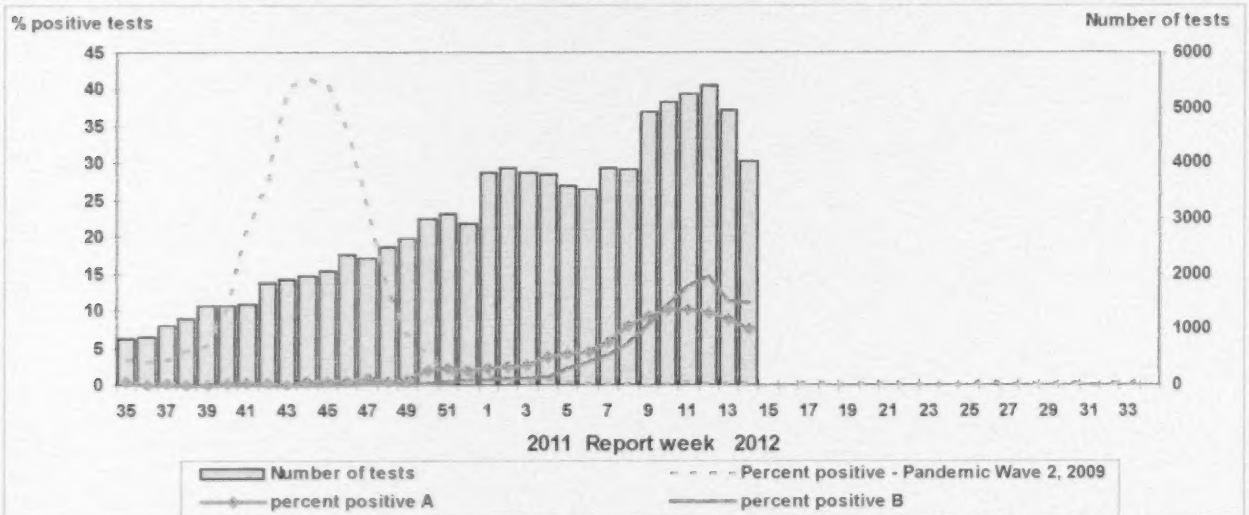
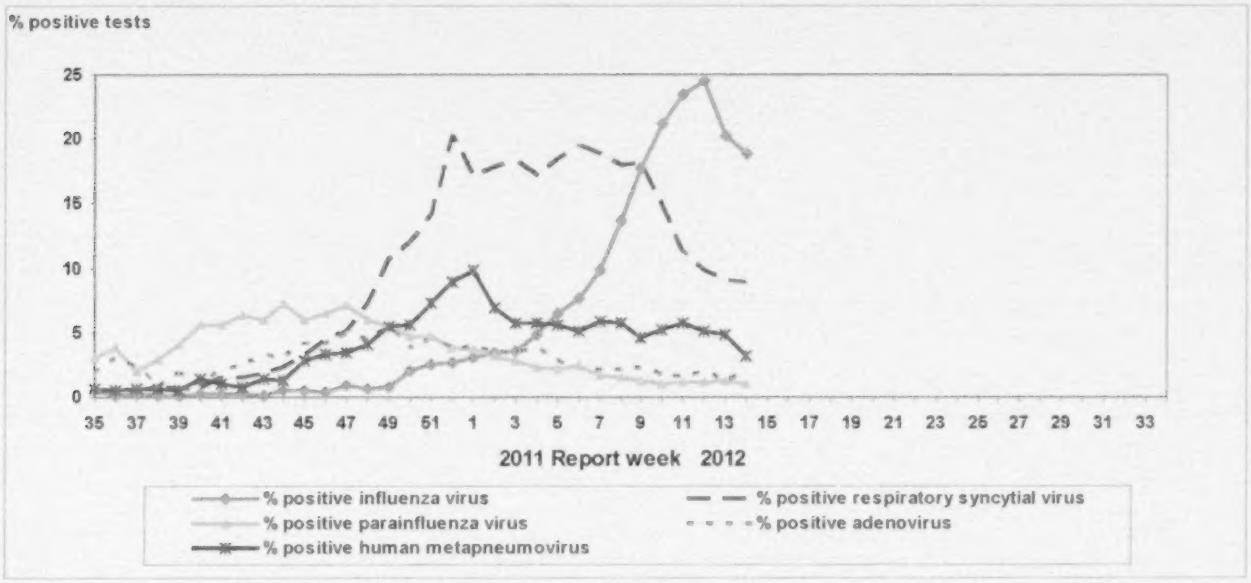


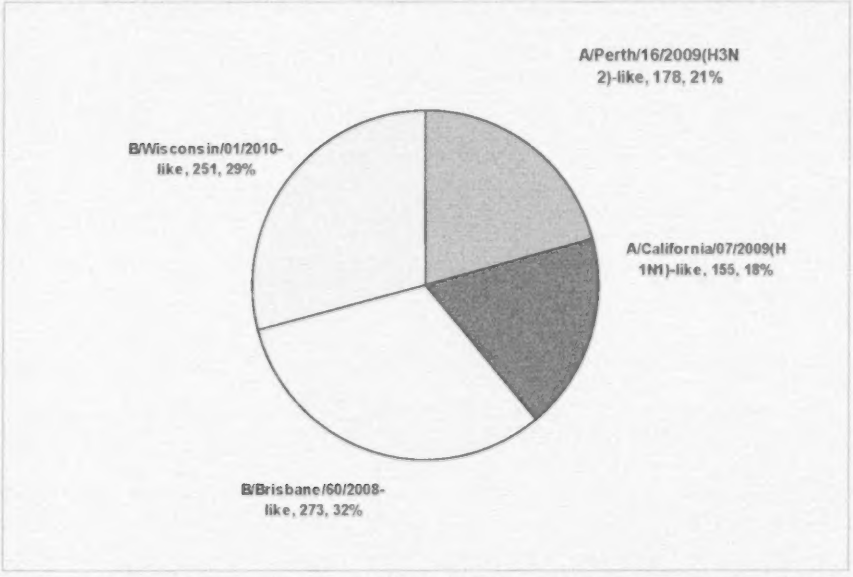
Figure 5. Percent positive influenza tests, compared to other respiratory viruses, Canada, by reporting week, 2011-2012


% positive tests
25
20
15
10
5
0
35 37 39 41 43 45 47 49 51 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33
2011 Report week 2012
% positive influenza virus
% positive parainfluenza virus
% positive human metapneumovirus
% positive respiratory syncytial virus
% positive adenovirus

Influenza Strain Characterizations

Since the start of the season, the National Microbiology Laboratory (NML) has antigenically characterized 857 influenza viruses (178 A/H3N2, 155 A/H1N1 and 524 B). Of the 178 A/H3N2 viruses (from NT, BC, AB, SK, MB, ON, QC & NB), 162 (90.4%) were antigenically similar to A/Perth/16/2009 while 16 (9.0%) viruses showed reduced titers with antiserum produced against A/Perth/16/2009. Of the 155 A/H1N1 viruses characterized (from BC, AB, SK, MB, ON, QC & NB), 154 (99.3%) were antigenically similar to A/California/07/2009 and 1 (0.7%) virus tested showed reduced titer with antiserum produced against A/California/07/2009. Of the 524 influenza B viruses characterized, 273 (52.1%) (from BC, AB, SK, MB, ON, QC, NB, NS & NL) were antigenically similar to the vaccine strain B/Brisbane/60/2008 (Victoria lineage); however 1 virus out of the 273 tested showed reduced titer with antiserum produced against B/Brisbane/60/2008. The remaining 251 (48.0%) influenza B viruses (from BC, AB, MB, ON, QC, NB, NS & NU) are antigenically related to the reference virus B/Wisconsin/01/2010-like, which belongs to the Yamagata lineage. (Figure 6)

Figure 6. Influenza strain characterizations, Canada, 2011-2012, N = 857



Note: The recommended components for the 2011-2012 Northern Hemisphere influenza vaccine include: A/Perth/16/2009 (H3N2), A/California/7/2009 (H1N1) and B/Brisbane/60/2008.

Antiviral Resistance

Since the beginning of the season, NML has tested 791 influenza viruses for resistance to oseltamivir (by phenotypic assay and/or sequencing) and 731 for zanamivir (by phenotypic assay) and it was found that all viruses tested were susceptible to oseltamivir and zanamivir. A total of 488 influenza A viruses (275 H3N2 and 2132 H1N1) were tested for amantadine resistance; all but 1 influenza A(H3N2) virus tested were resistant. (Table 3)

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2011-2012

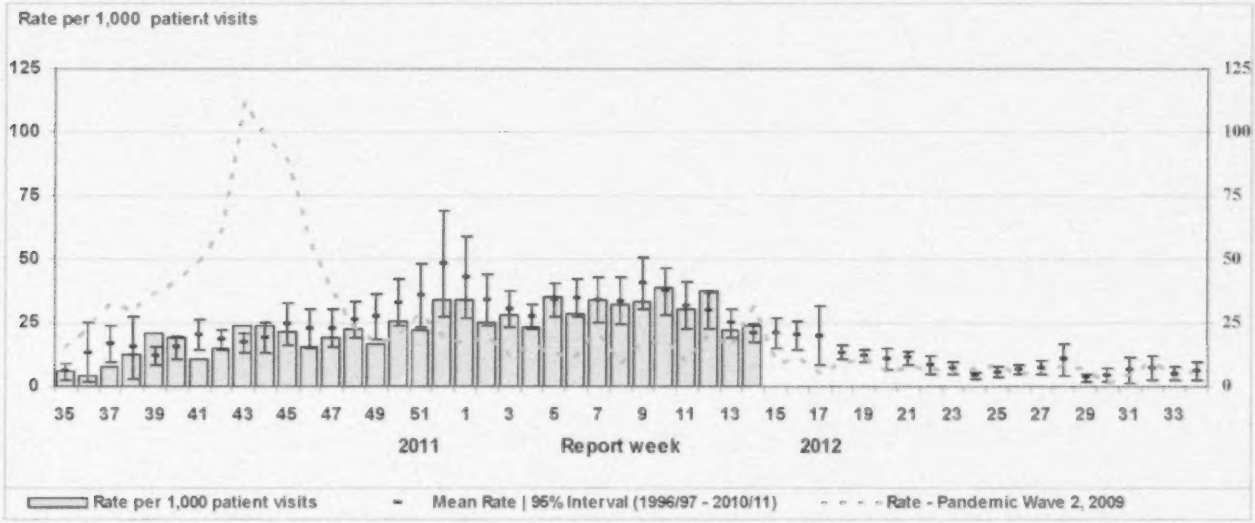
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	169	0	155	0	275	274 (99.6%)
A (H1N1)	152	0	145	0	213	213 (100%)
B	470	0	431	0	NA*	NA*
TOTAL	791	0	731	0	488	487 (99.8%)

* NA – not applicable

Influenza-like Illness (ILI) Consultation Rate

The national ILI consultation rate increased from the previous week (23.9 ILI consultations per 1,000 patient visits in week 14) but remains within the expected levels for this time of year (Figure 7). The highest consultation rates this week were observed in children under 5 (51.4/1,000 visits) and those 5 to 19 years old (37.1/1,000 visits).

Figure 7. Influenza-like illness (ILI) consultation rates, Canada, by report week, 2011-2012 compared to 1996/97 through to 2010/11 seasons (with pandemic data suppressed)



Note: No data available for mean rate in previous years for weeks 19 to 39 (1996-1997 through 2002-2003 seasons). Delays in the reporting of data may cause data to change retrospectively.

Severe Respiratory Illness Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 14, 22 new laboratory-confirmed influenza-associated paediatric (16 years of age and under) hospitalizations were reported through the Immunization Monitoring Program Active (IMPACT) network. Eight hospitalizations were due to influenza A (unsubtyped) (in BC & QC); 1 was due to A(H1N1) (in AB); 2 were due to A(H3N2) (in AB) and 11 were due to influenza B (inON, QC, NS & NL). In addition, 1 paediatric death was reported (AB) and was associated with an influenza B infection.

To date this season, 451 influenza-associated paediatric hospitalizations have been reported through IMPACT (from BC, AB, SK, MB, ON, QC, NS & NL); 204 (45.2%) were due to influenza A and 247 (54.8%) were due to influenza B. The proportion of cases by age group is as follows: 15.1% among infants <6 months of age; 20.4% among children 6-23 months of age; 30.6% were between 2-4 years; 22.4% were between 5-9 years; and 11.5% were between 10-16 years. Three influenza B associated deaths have been reported through the IMPACT network from the start of the season until week 14.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associate paediatric hospitalizations in Canada; therefore, the number of hospitalizations included in this report may differ from those reported by other Provincial and Territorial Health Authorities.

Influenza Hospitalizations and Deaths (Aggregate Surveillance System)
In week 14, 99 new laboratory-confirmed influenza-associated hospitalizations were reported of which 32 (32.3%) were in those < 20 years of age and 67 (67.7%) in those ≥ 20 years of age; 37.4% due to influenza A and 62.6% from influenza B. The hospitalizations were reported in NT (1) AB (16), MB (3), ON (74), NS (2) and NL (3). Of the 99 hospitalizations there were 6 adult influenza-associated deaths were reported (ON & SK), 5 of the deaths were associated with influenza B infection.

To date this season, 1061 influenza-associated hospitalizations have been reported from 7 provinces (AB, SK, MB, ON, NS, PE & NL) and 2 territories (YT & NT). The proportion of cases by age group is as follows: 9.4% were in those < 1 year of age; 17.9% were in those 1-4 years of age; 15.6% were in those 5-19 years of age; 11.7% were in those 20-44 years of age; 15.6% were in those 45-64 years of age and 29.8% were in those ≥ 65 years. The proportion of cases by influenza type and subtype were similar to the previous week and are as follows: 14.5% were A(H1N1)pmd09; 20.4% were A(H3N2); 13.1% were influenza A unsubtyped; 51.8% were influenza B and 0.2% had influenza A and B co-infection.

To date there have been 45 hospitalizations requiring ICU admission reported (from AB, SK, MB, NS & NL) of which 22.2% were < 20 years of age and 71.1% were ≥ 20 years of age. In addition, 58 influenza-associated deaths have been reported to date this season (from AB, SK, MB, ON & NS) of which 8.6% were among those < 20 years of age and 91.4% in those ≥ 20 years of age. Of the adult deaths, 79.2% were in those ≥ 65 years of age.

Note: Some of the hospitalizations and deaths reported in those ≤ 16 years of age may also have been reported in the IMPACT summary above if the hospitalization or death occurred in one of the 12 IMPACT hospitals. The reason for hospitalization or cause of death does not have to be attributable to influenza in order to be reported. Influenza-associated hospitalizations are not reported to PHAC by the following Provinces: BC, & QC. Only hospitalizations that require intensive medical care are reported by SK. ICU admissions are not reported in ON.

International Influenza Updates

WHO: No new updates have been reported by the WHO since March 30, 2012. *World Health Organization influenza update*

PAHO: No new updates have been reported by PAHO since April 3, 2012
Pan American Health Organization influenza situation report

United States: During week 13, influenza activity remained elevated in some areas of the United States, but declined nationally and in most regions. In week 13, 20.5% (932/4,551) of influenza tests were positive of which 85.8% were for influenza A viruses and 14.2% for influenza B. Since October 1, 2011, the CDC characterized 1,046 influenza viruses: 240 A/H1N1, 654 A/H3N2 and 152 B. Of the 240 A/H1N1 viruses characterized, 238 (99.2%) were A/California/7/2009(H1N1)-like and 2 (0.8%) showed reduced titers with antiserum produced against A/California/7/2009. Of the 654 influenza A/H3N2 viruses that were characterized, 520 (79.5%) were A/Perth/16/2009-like and 134 (20.5%) showed reduced titers with antiserum produced against A/Perth/16/2009. Of the 152 influenza B viruses that were characterized, 64 (42.1%) were B/Brisbane/60/2008-like (B/Victoria lineage) and 88 (57.9%) belonged to the B/Yamagata lineage. The proportion of outpatient visits for ILI was 1.7%, which is below the national baseline. Widespread influenza activity was reported in 10 states, 19 states reported regional influenza activity, 13 states reported localized influenza activity, while the rest reported either sporadic or no activity. One influenza-associated pediatric death was reported in week 13 (which occurred in week 9); bringing the total number of influenza associated-pediatric deaths to date this season to 13.
Centers for Disease Control and Prevention seasonal influenza report

Europe: In week 14, influenza activity continued to decrease in most countries in the WHO European Region. The majority of countries reported low to medium intensity for clinical activity. Influenza A(H3N2) viruses continue to dominate. Of the 657 ILI/ARI samples tested in week 14, 398 (60.6%) tested positive for influenza, of which 50.0% were for influenza A, 30.9% were for influenza A & B, and 19.1% for influenza B. Since week 40, 1,491 influenza viruses have been characterized antigenically: 24 were A/California/7/2009(H1N1)-like; 1232 were A/Perth/16/2009(H1N1)-like; 1 was for A/Brisbane/10/2007 (H3N2)-like; 28 were B/Florida/4/2006-like

(B/Yamagata/16/88 lineage), 36 were B/Bangladesh/3333/2007-like (B/Yamagata/16/88 lineage) and 170 were B/Brisbane/60/2008-like (B/Victoria/2/87 lineage). *EuroFlu weekly electronic bulletin*

Human Avian Influenza Updates

Since April 5, 2012, the WHO reported two new cases of human A/H5N1 avian influenza infection from Cambodia (1) and Egypt (1). The case from Cambodia is a 6-year old female from Kampong Chhnang province who developed symptoms on March 22, 2012, admitted to hospital on March 28 and died on March 30; investigations indicate the patient had contact with sick or dead poultry. The case from Egypt was a 36-year old female from Giza governorate who developed symptoms on April 1, 2012, was hospitalized and died on April 7; investigations indicate she had exposure to backyard poultry. *WHO Avian influenza situation updates*

FluWatch reports include data and information from the following sources: laboratory reports of positive influenza tests in Canada (National Microbiology Laboratory), sentinel physician reporting of influenza-like illness (ILI), provincial/territorial assessment of influenza activity based on various indicators, including laboratory surveillance, ILI reporting, and outbreaks, influenza-associated paediatric and adult hospitalizations, antiviral sales in Canada, and WHO and other international reports of influenza activity.

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

ILI definition for the 2011-2012 season

ILI in the general population: Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

Definitions of ILI/Influenza outbreaks for the 2011-2012 season

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. workplace, closed communities.

Influenza Activity Levels Definition for the 2011-2012 season

Influenza Regional Activity levels are defined as:

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html. Ce rapport est disponible dans les deux langues officielles. Pour en recevoir un exemplaire dans l'autre langue chaque semaine, veuillez communiquer avec Estelle Arseneault, Division de l'immunisation et des infections respiratoires au (613) 998-8862.